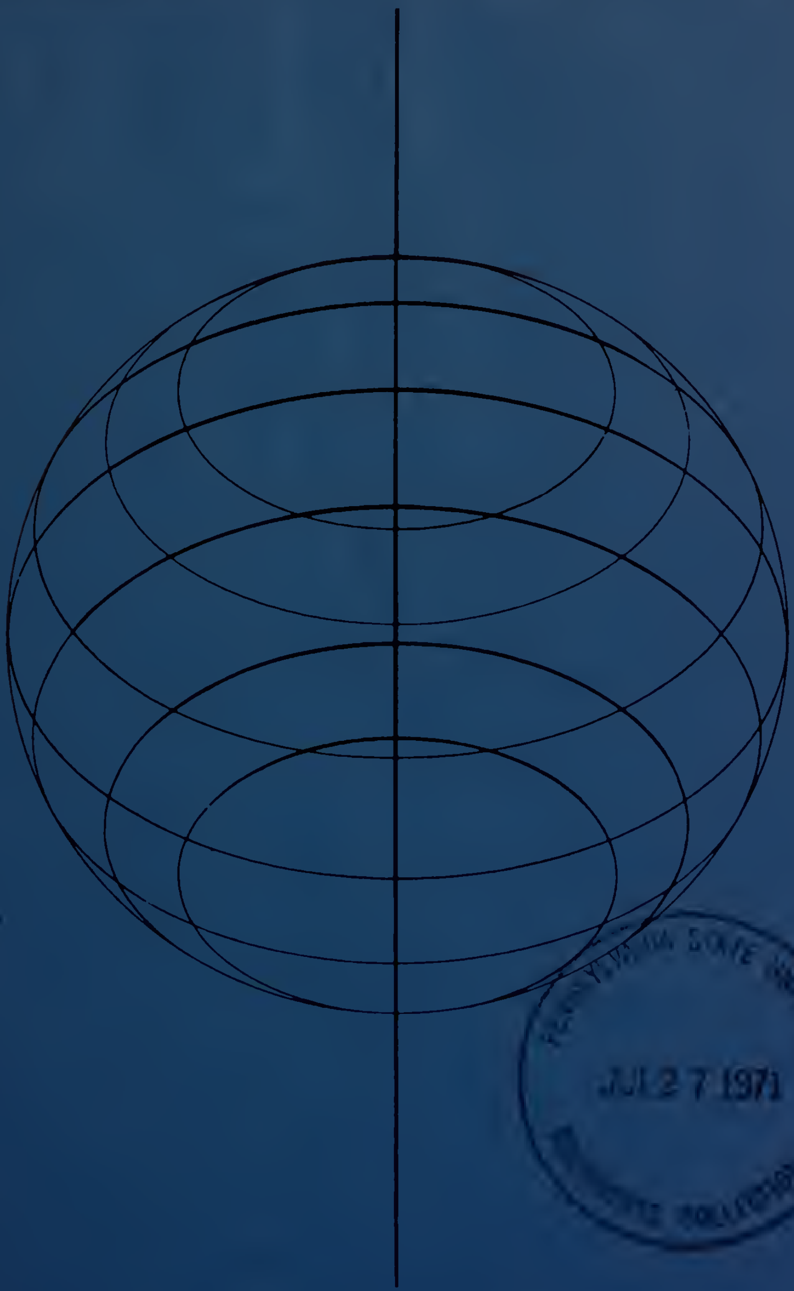
A UNITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION

NOAA Publications Announcement No. 71-4

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration



PENNSYLVANIA STATE UNIVERSITY
JUL 27 1971
DOCUMENTS COLLECTION

ROCKVILLE, MD

April 1971

NOAA Publications Announcements include abstracts of all NOAA scientific and technical publications, NOAA contractor and grantee reports, outside publications, NOAA authors, translations of scientific and technical publications sponsored by NOAA under the P.L. 480 program or otherwise and publications of interagency, intergovernmental, and international organizations in which NOAA is officially represented or which may originate programs in which NOAA participates. Those serial data publications whose content is essentially repetitive in each issue, except for the time period for which the reported data apply, will be listed only once each year.

Publications are listed according to the following categories:

01 **Atmospheric Science**
including Aeronomy, Meteorological observation, analysis and forecasting, Meteorological instruments, Physical and dynamic meteorology, Air quality and pollution, Weather modification, Climatology

02 **Earth Sciences**
including Geodesy, Geomagnetism, Photogrammetry, Cartography, Seismology.

03 **Environmental Systems**
including Data acquisition and communication systems, Environmental satellites

04 **Hydrology and Limnology**
including River and flood forecasting, Precipitation, Snow, Evaporation, River and lake data and studies

05 **Marine Biology and Fisheries**
including related aspects of food science and technology

06 **Marine Geology and Geophysics**
including mining and mineral technology

07 **Oceanography**
including Physical and Dynamic Oceanography, Air-sea interaction, Coastal studies, Oceanographic instruments

08 **Physics**
including plasma physics, fluid mechanics and dynamics, and wave propagation

09 **Miscellaneous**

Obtaining Copies of Publications—see inside back cover.

01 Atmospheric Science

71-04-01-01 UDC 551.509.313:551.509.327:551.515.21

Anthes, Richard A. (NOAA, Environmental Research Laboratories, National Hurricane Research Laboratory, Miami, Fla.). "ITERATIVE SOLUTIONS TO THE STEADY-STATE AXISYMMETRIC BOUNDARY-LAYER EQUATIONS UNDER AN INTENSE PRESSURE GRADIENT". *Monthly Weather Review*, *99*(4):261-268, Apr. 1971. #2, $0.65.

Steady-state solutions to the complete axisymmetric Navier-Stokes equations are obtained by an iterative technique for an intense pressure-gradient force representative of the tropical cyclone. Solutions for the horizontal and vertical components of motion are compared for various horizontal and vertical mixing coefficients, drag coefficients, and Coriolis parameters. A multilevel model is used, and the results are compared with those from a simple one-level model. Descriptors: 1. Navier-Stokes equations; 2. Atmospheric circulation; 3. Hurricanes; 4. Coriolis effects; 5. Mathematical models.

71-04-01-02

Arnett, A. B., Jr., and Steadman, Charles R., Jr. "LOW-LEVEL WIND FLOW OVER EASTERN PANAMA AND NORTHWESTERN COLOMBIA". ESSA Research Laboratories, Air Resources Laboratories, Silver Spring, Md. *ESSA Technical Memorandum ERLTM-ARL 26*. Atomic Energy Commission, Nevada Operations Office, Contract No. SF-54-351. Final Report. Sept. 1970. 79 pp. #1 COM-71-00284

This report presents analyses of low-level wind data collected along Route 17 in the Darien region of Panama and Route 25 in northwest Colombia, as part of the Interoceanic Canal Studies to determine the feasibility of constructing a sea-level canal across the American Isthmus. Both synoptic (macroscale) and local (mesoscale) features were examined. Local influences, such as differential heating between land and sea (diurnal), topography, and widespread areas of precipitation are shown to be important factors influencing the low-level wind flow. Descriptors: 1. Velocity measurement; 2. Wind velocity; 3. Wind direction; 4. Diurnal variations; 5. Topographic features; 6. Precipitation (meteorology); 7. Nuclear excavation; 8. Fallout.

71-04-01-03

Atmospheric Division, Office of Plans and Programs, National Oceanic and Atmospheric Administration, Rockville, Md. "GEOPHYSICAL MONITORING FOR CLIMATIC CHANGE". *NOAA Program Plan 71-1*. Feb. 1971. 24 pp. #1 COM-71-00307

This Plan for NOAA is the program for global monitoring of man's inadvertent modification of weather and climate. The interrelated activities, several of which should be conducted simultaneously, are analyzed in terms of the requirements and the actions to be undertaken. The Plan includes the cost estimate of achieving the programed goals over five phases, each approximating a fiscal year. The Plan calls for early establishment and operation of the global baseline monitoring system; however, the major areas of effort are sufficiently flexible to allow priority consideration of the needs of the Council on Environmental Quality, the Environmental Protection Agency, and others active in monitoring and improving the natural environment of the Nation. Descriptors: 1. Climatic changes; 2. Project planning; 3. Environmental engineering; 4. Objectives; 5. Air pollution; 6. International relations; 7. Costs; 8. Geophysics; 9. Monitors.

U. S. Depository Copy

71-04-01-04 UDC 551.513.1:551.515.5:551.557.1

Bennett, John R., and Young, John A. (both, the University of Wisconsin, Madison, Wis.). "THE INFLUENCE OF LATITUDINAL WIND SHEAR UPON LARGE-SCALE WAVE PROPAGATION INTO THE TROPICS". Monthly Weather Review, 99(3):202-214, Mar. 1971. #2 $0.65. Supported by ESSA Grant E 230-68(G).

The effects are studied by the use of a one-layer model. The governing equations are reduced to a second-order differential equation for v, the northward component of velocity. The equation is analyzed as an eigenvalue problem and solved numerically for the free modes of the Tropics for the case with zero mean flow. These solutions are compared with solutions that are forced at a boundary situated in midlatitudes, for cases with and without a mean zonal flow. At "critical latitudes," the basic equation has a singularity (where the phase speed of a wave forced at the boundary is equal to the mean flow). The case for forced motions is investigated in more detail by numerically studying the evolution of disturbances as an initial value problem for the case of nondivergent flow. The horizontal shear is shown to significantly alter the types of midlatitude motions that can affect tropical motions. In particular, disturbances with large eastward phase propagation are shown to have negligible effect. Disturbances that have phase speeds that are somewhere equal to the mean flow are shown to be absorbed at the critical latitude. Disturbances with phase speeds more westward than the mean flow may be free to propagate into the Tropics, providing their wavelengths are not too short. Descriptors: 1. Tropics; 2. Atmospheric circulation; 3. Wind direction; 4. Wind velocity; 5. Wind shear; 6. Wave propagation; 7. Zonal flow; 8. One-layer model.

71-04-01-05 UDC 551.509.314(73-11)"1969.12.21"

Bermowitz, Robert J. "OBJECTIVELY COMPUTED SURFACE DIAGNOSTIC FIELDS". NOAA, National Weather Service, Techniques Development Laboratory, Silver Spring, Md. NOAA Technical Memorandum NWS TDL-38. Feb. 1971. 23 pp. #1 COM-71-00301

Hourly surface observations of temperature and wind are objectively analyzed on a grid with a gridlength of about 50 miles (¼ that used at the National Meteorological Center). The analyses are then used to compute relatively small-scale diagnostic fields of divergence, vorticity, frontogenetical function, and temperature advection. The results of two test cases are described. It appears that the diagnostic fields can be helpful in short-range predictions. In some cases, they seem to be related to significant smaller scale features such as regions of thunderstorm and tornado activity and incipient cyclogenesis. Synoptic scale features such as frontal zones appears to be rather well represented by the diagnostic fields. Descriptors: 1. Weather forecasting; 2. Surface temperature; 3. Wind (meteorology); 4. Grids (coordinates); 5. Advection; 6. Divergence; 7. Synoptic meteorology.

71-04-01-06

Boshe, Jerome R. "AN EXPERIMENTAL INVESTIGATION OF AN OPTICAL SOUNDING TECHNIQUE FOR ATMOSPHERIC OZONE". Department of Physics and Astronomy, University of Maryland, College Park, Md. Technical Report 71-010. NOAA, National Environmental Satellite Service, Washington, D.C. NOAA Contract E-257-69(N). Dec. 1970. 221 pp. #1 COM-71-00280

The design and performance of a balloon borne experiment to investigate an indirect technique for optical sounding for atmospheric ozone is discussed in detail. The experimental payload was designed to make a number of complementary measurements which allow first a maximum utilization of the indirect sounding technique and second a comparison with in situ measurements. The experimental system consisted of the following detection sub-systems: 1. UV directional spectrophotometer; 2. Solar aspect; 3. Ground cover identification; 4. Cloud height detection; 5. Environmental data, and 6. In situ ozone profile. These subsystems were incorporated into a frame gondola to form an integral payload. The payload was flown eastward from Palestine, Tex., on 11 Oct. 1968 at a float altitude of 36 km for about 6 hours. The primary data returned, after reduction and processing, are contained in five curves of atmospheric spectral radiance as viewed from above in the nadir direction. These measurements generally agreed with calculated values which were based on a rather simple atmospheric model. These data have been used to obtain a cloud albedo of about 64 percent at 0.33 microns. The data were further analyzed to infer an ozone distribution which was found to be similar to, but generally less than, the seasonal mean ozone distribution for the region of the flight. Descriptors: 1. Atmospheric sounding; 2. Ozone; 3. Meteorological balloons; 4. Albedo.

71-04-01-07

Briggs, Gary A. (NOAA, Air Resources Laboratory, Atmospheric Turbulence and Diffusion Laboratory, Oak Ridge, Tenn.). "A SIMPLE MODEL FOR BENT-OVER PLUME RISE". Doctoral Ph.D. Thesis, Pennsylvania State University. Dec. 1970. 122 pp. #1 COM-71-00313

This thesis develops a model that predicts the rise of a continuous gaseous emission above its source height when it is bent by a wind. The basic assumptions are that mass, buoyancy, and momentum are conserved, with new vertical momentum being generated only by buoyancy forces. The flow is assumed to be stationary. The equations for bent-over plume rise are simplified by approximating the horizontal component of the mean plume motion by the mean ambient wind velocity at the height of the plume center line. It is shown that the vertical drag force on the plume can be neglected. In order to close the equations, it is assumed that the plume radius, r, is proportional to the plume rise above the source in the first stage of rise. Empirical evidence is shown that the constant of proportionality is about 0.5 for a buoyancy-dominated plume, but that it is a function of the ratio of efflux velocity to wind speed for a momemtum-dominated plume. When atmospheric turbulence is present, a second stage of rise occurs when the first-stage growth rate of r, dr/dt, is exceeded by the second-stage growth rate of r. The latter quantity is assumed to be a function of r itself and of epsilon, which determines the characteristics of turbulent flow in the inertial subrange of atmospheric turbulence; dimensional analysis then suggests that dr/dt is proportional to epsilon to the one-third power and r to the one-third power. Descriptors: 1. Plumes; 2. Flue gases; 3. Air pollution; 4. Effluents.

71-04-01-08 UDC 551.526.6:551.515.23(263)"1966.08+1968.08"

Carlson, Toby N. (NOAA, Environmental Research Laboratories, National Hurricane Research Laboratory, Miami, Fla.). "WEATHER NOTE: AN APPARENT RELATIONSHIP BETWEEN THE SEA-SURFACE TEMPERATURE OF THE TROPICAL ATLANTIC AND THE DEVELOPMENT OF AFRICAN DISTURBANCES INTO TROPICAL STORMS". Monthly Weather Review, 99(4):309-310, Apr. 1971. #2 $0.65.

An analysis for the past 5 years shows a correlation between the number of tropical storms formed between July 10 and September 20 and the ocean temperatures over a wide area centered near 10°N and 35°W. Descriptors: 1. Storms; 2. Tropical cyclones; 3. Sea states; 4. Oceans; 5. Temperatures.

71-04-01-09

Chandler, T. J. (United Kingdom). "SELECTED BIBLIOGRAPHY ON URBAN CLIMATE". World Meteorological Organization, Geneva. WMO Publication No. 276.TP.155. 1970. 383 pp. Price $12.50. WMO Publication Center, Division of UNIPUB, Inc., P.O. Box 433, New York, N.Y. 10016.

This complements WMO Technical Note 108, "Urban Climates", and Technical Note 109, "Building Climatology". In which the proceedings of the Symposium on Urban Climates and Building Climatology (Brussels, October 1968) have been published. A draft edition was distributed to the participants of the Symposium and to Members of WMO for their comments. The publication of this latest version expresses the interest shown in this subject and incorporates 25 sections containing references on general urban climatology, aspects of building climatology, and air pollution, as well as references pertaining to individual climatic elements. Descriptors: 1. Bibliographies; 2. Climatology; 3. Climatology (urban); 4. Climatology (building); 5. Air pollution.

71-04-01-10

Crutcher, Harold L., and Almazan, Jimmy A. "AN EMPIRICAL ANALYSIS OF THE 10-15 KM MAXIMUM WINDS TO DETERMINE APOLLO AND AAP LAUNCH OPPORTUNITIES, CAPE KENNEDY, FLORIDA". ESSA, Environmental Data Service, National Weather Records Center, Asheville, N.C. NASA-CR-61260. NASA, George C. Marshall Space Flight Center, Huntsville, Ala. NASA Government Order No. H-76789. Jan. 1969. 554 pp. #1

The first of this two-part study gives the launch opportunity empirical probabilities at Cape Kennedy, Fla. A launch opportunity is defined as an opportunity to launch a vehicle through the wind field of the 10- to 15-km region when certain specified prior conditions have been given for launching. Wind observations are available at 12-hour intervals. There may be one launch opportunity in each 12-hour period. The probabilities are presented for the number of opportunities for monthly reference periods. The periods range from one 12-hour interval to 40 12-hour intervals or 20 days. The probabilities are presented for both consecutive and nonconsecutive opportunities. The second part of this study presents the empirical probabilities for no opportunity to launch a vehicle. Again, the consecutive and nonconsecutive features are given for each month. The empirical probabilities are based on records available for the overall period from January 1956 through December 1963 for the Cape Kennedy area. This study represents one of the few analyses of twice daily maximum 10-15 km layer winds in the Cape Kennedy area. The 8-year serially complete data sample used in the analysis is unique. It has been obtained through a thorough examination of all official upper air records in the Cape Kennedy area. Descriptors: 1. Launching; 2. Wind (meteorology); 3. Probability theory; 4. Troposphere; 5. Launch opportunities; 6. Cape Kennedy, Fla.; 7. Spacecraft launching; 8. Tables (data); 9. Atmospheric circulation; 10. Meteorological data.

71-04-01-11

Crutcher, H. L., Almazan, J. A., and Quinlan, Frank T. "PREDICTION OF THE MAXIMUM WIND SPEED IN THE 10-15 KM LAYER ABOVE CAPE KENNEDY". ESSA, Environmental Data Service, National Weather Records Center, Asheville, N.C. NASA-CR-61257. NASA, George C. Marshall Space Flight Center, Huntsville, Ala. NASA Government Order No. 76789. Jan. 1969. 307 pp. #1

Tables that are presented contain conditional probabilities based on 8 years of data. The tables are presented by month. These permit the selection of probabilities that the maximum wind speed will be above (or below) a selected criterion for a specified period of time provided that the maximum speeds have been above (or below) the same speed criterion or certain periods of time. No attempt is made to place bounds of confidence on the probabilities. Descriptors: 1. Launching; 2. Wind (meteorology); 3. Spacecraft launching; 4. Probability theory; 5. Tables (data); 6. Atmospheric circulation; 7. Cape Kennedy, Fla.; 8. Atmospheric pressure; 9. Meteorological data.

71-04-01-12

Crutcher, H. L, and Meserve, J. M. (both, NOAA, Environmental Data Service, National Climatic Center, Asheville, N.C.). "SELECTED LEVEL HEIGHTS, TEMPERATURE AND DEW POINTS FOR THE NORTHERN HEMISPHERE". Naval Weather Service Command, Washington, D.C. NAVAIR 50-1C-52. (This publication supersedes NAVAIR 50-1C-52 dated Sept. 1966). Jan. 1970. 425 pp. #2

This work presents in chart form monthly average statistics. These statistics are the means (unweighted monthly average of the individual year-month averages) and the standard deviation of the monthly averages. Standard deviations are not presented for the surface or sea level data. For the heights and temperatures, the statistics are presented for the 850-, 700-, 500-, 300-, 200-, and 100-mb levels. At the earth's surface, sea level pressures are presented in lieu of the 1,000-mb heights. Dewpoint statistics are presented only for the surface, 850-, 700-, and 500-mb levels. The data used are those contained in Monthly Climatic Data for the World transmitted to the National Weather Records Center in Asheville, N.C.; therefore, full acknowledgment is made to all countries who participate in the monthly climatic data program of the World Meteorological Organization (WMO). The period of surface data is 1931-60. The period of upper air data covers the years of 1950-64. This is a maximum period of 15 years. Descriptors: 1. Climatology; 2. Meteorological data; 3. Statistical methods; 4. Meteorological charts; 5. Atmospheric pressure; 6. Dew point; 7. Ambient temperature; 8. Northern Hemisphere.

71-04-01-13

Curry, Billy R. (NOAA, State Climatologist for Oklahoma). Freezing Temperatures in Oklahoma. Cooperative Extension Service, Oklahoma State University, Stillwater, Okla. Jan. 1971. 25 pp. #1 COM-71-50010

A bulletin to provide information on the probability of freezing temperatures after specified dates in the spring and before specified dates in the fall. Extreme and mean dates of occurrence of freezing temperature and average length of the freeze-free period (growing season) are also included. Descriptors: 1. Climatic changes; 2. Climatology; 3. Weather; 4. Temperature; 5. Freezing; 6. Frost; 7. Frost protection; 8. Seasonal variations; 9. Oklahoma.

71-04-01-14 UDC 551.515.23:551.506.1:551.507.362.2(084.1)(266)"1970"

Denney, William J. (NOAA, National Weather Service Forecast Office, San Francisco, Calif.). "EASTERN PACIFIC HURRICANE SEASON OF 1970". Monthly Weather Review, 99(4):286-301, Apr. 1971. #2 $0.65.

A statistical resume of the season is presented, and a tentative climatology is proposed, based on 5 years of operational satellite coverage.

Basic data were increased through more reconnaissance flights and satellite pictures. No direct storm casualties or damage from storm winds or seas were reported. Casualties and damage resulting from the Arizona flood disaster were indirectly related to tropical storm Norma. The chronicle of hurricanes and tropical storms deals mainly with the relationship of the data to hurricane intensity and to physical processes within the various tropical cyclones. Descriptors: 1. Storms; 2. Tropical cyclones; 3. Hurricanes; 4. Aerial photography; 5. Spaceborne photography; 6. Climatology.

71-04-01-15

Donnelly, Richard F. "EXTREME ULTRAVIOLET FLASHES OF SOLAR FLARES OBSERVED VIA SUDDEN FREQUENCY DEVIATIONS". ESSA Research Laboratories, Space Disturbance Laboratory, Boulder, Colo. ESSA Technical Report ERL 169-SDL 14. Sept. 1970. 102 pp. #2 $1.00 #1 COM-71-50021

The properties of EUV flashes from solar flares measured via a type of ionospheric event are presented. These results are based on 10 years of observations at Boulder wherein about 2,000 sudden frequency deviation (SFD) events were detected and scaled. The characteristics of SFD's are sensitive to bursts of solar radiation at wavelengths in the 1 to 1030Å range. Unlike most detectors of solar radiation, SFD's are sensitive to the impulsiveness of the solar radiation and are insensitive to the non-flare radiation. The factors upon which SFD sensitivity depend are discussed, and the wavelength spectrum of the radiation responsible for SFD's is revised. The rise time, duration, intensity, and fine time-structure of SFD's are statistically studied. Previously unpublished SFD data for famous flares are given in detail. A revised list of Boulder SFD observations is given for 1968 through June 1970, when routine Boulder SFD observations were terminated. Present knowledge of the close association of EUV flashes with hard X-ray bursts, white-light emission, and microwave radio bursts are reviewed. The relationship of EUV flashes to small bright impulsive kernels in H alpha and other optical observations of solar flares are presented, and the location of these kernels discussed. The intensity of EUV flashes depends on the central meridian distance of the flare location; the intensity decreases at the limb. Several models for the impulsive EUV source region are proposed. Descriptors: 1. Solar flares; 2. Ionospheric disturbances; 3. Far ultraviolet radiation; 4. White light; 5. Solar x-rays.

71-04-01-16

Elford, Robert C., and Stilz, John. (both, ESSA, United States Weather Bureau, San Francisco, Calif.). "CLIMATES OF SAN DIEGO COUNTY, AGRICULTURAL RELATIONSHIPS". University of California Agricultural Extension Service in cooperation with ESSA, Weather Bureau, Climates of San Diego County, Agricultural Relationships. Nov. 1970, pp. 7-12. #1 COM-71-00226

This article has details of the considerable variation among climates of the coastal, mountain, and desert areas. Descriptors: 1. Climatology; 2. Geography; 3. Temperature; 4. Sunlight; 5. Terrain; 6. Snow; 7. Evapotranspiration; 8. Evaporation; 9. Humidity; 10. Wind velocity.

71-04-01-17 UDC 551.509.314:551.571.2(73)

Elvander, R. C. "PREDICTION OF SURFACE DEW POINT TEMPERATURES". NOAA, National Weather Service, Techniques Development Laboratory, Silver Spring, Md. NOAA Technical Memorandum NWS TDL-37. Feb. 1971. 40 pp. #1 COM-71-00253

Screening regression is used to obtain relationships between predictands consisting of surface dew point temperatures, and predictors consisting of the predictand values a day earlier and upper air parameters analyzed at selected gridpoints on the same day. The dependent data are stratified by bimonthly periods, July-August and November-December, and consist of 10 years of surface observations, 1951-60, taken at 1400 LST at 89 cities in the United States. The upper air predictors are obtained from twice daily values of 700- and 1000-mb heights on a diamond grid which covers most of North America and the adjacent oceans. Byproducts of the screening regression runs are used to develop a climatology of the 1400-LST dew point temperature. Correlation fields illustrating the large-scale relationships between the predictors and predictands are shown. The resulting equations for November-December are used to obtain dew point temperature forecasts by applying them to numerical prognostic maps. Comparison of these with dew point temperatures forecast with a generalized equation useful over the Eastern United States is made. Also, forecasts of low-level dew point temperatures based on a three-dimensional Lagrangian technique are compared with the statistical forecasts developed in this study. Descriptors: 1. Meteorological data; 2. Meteorological charts; 3. Synoptic meteorology; 4. Weather forecasting; 5. Weather observations; 6. Dew point; 7. Temperature; 8. Lagrangian functions; 9. United States.

71-04-01-18

ESSA, Atlantic Oceanographic and Meteorological Laboratories, Miami, Fla., and ESSA, Pacific Oceanographic Laboratories, Seattle, Wash. Collected Reprints - 1969 Volume I. Sept. 1970. 628 pp. #1 AD717140 #2 $4.25., Volume II. Sept. 1970. 574 pp. #1 AD717141 #2 $3.75.

Because the published results of the scientific and technical work of these two laboratories are scattered through the literature, they are being brought together in a series of annual publications that provide the researcher and interested layman a convenient summary of their results. This two-volume set, the fourth publication in the series, has the published papers for the year 1969. Descriptors: 1. Bathymetry; 2. Dynamic oceanography; 3. Physical oceanography; 4. Marine geology; 5. Continental drift; 6. Marine geophysics; 7. Convection; 8. Hurricanes; 9. Numerical analysis; 10. Weather modification; 11. Meteorological instruments.

71-04-01-19 UDC 551.554:551.557(966.1)"1967.03-04"

Estoque, Mariano A. (Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, Coral Gables, Fla.). "THE PLANETARY BOUNDARY LAYER WIND OVER CHRISTMAS ISLAND". Monthly Weather Review, 99(3):193-201, Mar. 1971. #2, $0.65.

Observations over an atoll near the Equator were made using the double-theodolite pilot balloon method. The observed mean wind profile is representative of boundary layer flow over a homogeneous surface with a very low value of the Coriolis parameter. The wind is predominantly easterly with a small backing with height. Analysis of the wind profile suggests that the component of motion along the east-west direction is approximately geostrophic; however, the component along the north-south direction is highly nongeostrophic. The analysis also indicates that the change in the wind direction with height is controlled mainly by the height variation of the horizontal pressure gradient. Descriptors: 1. Atmospheric circulation; 2. Meteorological observation; 3. Boundary layer flow; 4. Meteorological balloons; 5. Meteorological data

71-04-01-20 UDC 551.515.427:551.558.1:551.511.2

Fankhauser, James C. (National Center for Atmospheric Research, Boulder, Colo.). "THUNDERSTORM-ENVIRONMENT INTERACTIONS DETERMINED FROM AIRCRAFT AND RADAR OBSERVATIONS". Monthly Weather Review, 99(3):171-192, Mar. 1971. #2. $0.65.

Aircraft measurements at low- and mid-cloud levels near two isolated and persistent Great Plains thunderstorms concurrently scanned by radar are analyzed to determine the kinematic properties of the near-cloud air flow, the moisture budget, and the dynamical interactions between the cloud and its surroundings. Time variation in velocity divergence, relative vorticity, and moisture flux convergence in the subcloud layer relates well to changes in storm development and translation. Aircraft winds and radar chaff trajectories substantiate the premise in some models that mature thunderstorms, moving more slowly than ambient winds, divert and distort midtropospheric air motion in a manner similar to solid obstacles in relative streaming flow. Observed ingestion of midtropospheric air motion tracers demonstrates that, at the same time, internal circulations aloft are not entirely insulated from the environment. A graphical synthesis of three-dimensional air flow within and around a typical Great Plains cumulonimbus is presented, accommodating concepts in earlier models with the resolved circulation features. The involvement of cool, dry middle-level air in the internal circulation and its role in maintaining downdrafts are discussed. In considering factors influencing storm movement, it is concluded that, in addition to propagative mechanisms, hydrodynamical drag and deflection forces acting at cloud boundaries may play a significant role in determining a thunderstorm's preferred path with respect to the mean winds. Descriptors: 1. Atmospheric disturbances; 2. Thunderstorms; 3. Weather observations; 4. Weather reconnaissance aircraft; 5. Meteorological radar; 6. Wind velocity; 7. Wind shear; 8. Atmospheric circulation.

71-04-01-21

Farley, D. T. (Center for Radiophysics and Space Research, Cornell University), Balsley, B. B. (ESSA Research Laboratories, Boulder, Colo.), Woodman, R. F. (Radio Observatorio de Jicamarca, Lima, Peru), and McCure, J. P. (University of Texas at Dallas). "EQUATORIAL SPREAD F: IMPLICATIONS OF VHF RADAR OBSERVATIONS". Journal of Geophysical Research, Space Physics, 75(34): 7199-7216, Dec. 1, 1970. #1 COM-71-00250

Scatter from field-aligned irregularities associated with equatorial spread F has been studied using the powerful 50 MHz radar at Jicamarca. We find that these irregularities, which have a wavelength of 3 meters, first, at times can be generated anywhere in the F region, no matter with what vertical velocity the region is moving; second, have growth times of a few seconds or less; third, move at velocities comparable to that of the F layer; and fourth, may attain strengths of perhaps 10^7-10^8 times the background thermal level. There are also indications that there may be two types of irregularities, classified roughly as strong and weak, and that there may be a minimum threshold altitude that the bottom of the F layer must be above before the irregularities are first generated. These and other observed characteristics of the irregularities seem to rule out currently popular theories of their origin (the vertical drift instability suggested first by Martyn, mechanisms based on coupling between the E and F regions, gravitational instabilities, generation by hydromagnetic waves, and others) and several other well-known types of plasma instability. Gradients of density and drift velocity remain as possible sources of instability, but at the moment we can only speculate what may ultimately prove to be the correct explanation. Descriptors: 1. E region; 2. F region; 3. Equatorial sporadic E layer; 4. Spread F; 5. Ionospheric disturbances; 6. Electromagnetic scattering; 7. Plasma dynamics; 8. Radar scanning.

71-04-01-22

Fehsenfeld, F. C., and Ferguson, E. E. (both, ESSA Research Laboratories, Aeronomy Laboratory, Boulder, Colo.). "THERMAL ENERGY REACTIONS OF C^- WITH O_2, N_2O, CO, AND CO_2". The Journal of Chemical Physics, 53(7):2614-2615, 1 Oct. 1970. #1 COM-71-00149

Thermal energy reaction rate constants have been measured using a flowing afterglow technique. The reaction with O_2 produces O^-; the reactions with CO, CO_2, and N_2O produce free electrons and neutral products; and H_2 is not observed to react. Descriptors: 1. Aeronomy; 2. Atmospheric composition; 3. Atmospheric physics; 4. Geophysics; 5. Upper atmosphere; 6. Ions; 7. Reaction kinetics; 8. Oxygen; 9. Carbon monoxide; 10. Carbon dioxide; 11. Hydrogen; 12. Nitrogen oxide.

71-04-01-23 UDC 551.588.4:551.578.45:551.507.362.2:551.576.1(084.1)(285:71-73)

Ferguson, Edward W. (NOAA, National Environmental Satellite Service, Applications Group, Suitland, Md.). "PICTURE OF THE MONTH: SATELLITE VIEW OF A LAKE-EFFECT SNOWSTORM". Monthly Weather Review, 99(3):247-248, Mar. 1971. #2 $0.65.

Descriptors: 1. Meteorological satellites; 2. Spaceborne photography; 3. Lake-effect snowstorms; 4. Lake Erie.

71-04-01-24

Federal Coordinator for Meteorological Services and Supporting Research, National Oceanic and Atmospheric Administration, Washington, D.C. "FEDERAL PLAN FOR AIR POLLUTION CONTROL METEOROLOGICAL SERVICE: TO SUPPORT FEDERAL, STATE, AND LOCAL AIR POLLUTION CONTROL AGENCIES". FCM 71-1. Jan. 1971. 22 pp. #1 COM-71-00200 (Plan prepared by the National Oceanic and Atmospheric Administration and Environmental Protection Agency.)

This describes agency responsibilities, service concepts, and a 5-year program directed toward providing improved services to the users. The two Federal agencies concerned with meteorological support to air pollution control agencies have participated in preparing this Plan; specifically, NOAA of the Department of Commerce and EPA. Descriptors: 1. Planning; 2. Air pollution; 3. Control; 4. Services (meteorological); 5. Weather forecasts; 6. Warning indicators; 7. Protection.

71-04-01-25 UDC 551.515.73(261)(263)"1970"

Frank, Neil L. (NOAA, National Weather Service, National Hurricane Center, Miami, Fla.). "ATLANTIC TROPICAL SYSTEMS OF 1970". Monthly Weather Review, 99(4):281-285, Apr. 1971. #2 $0.65.

The history of all tropical systems that formed over the Atlantic, Caribbean, and Gulf of Mexico during the 1970 hurricane season has been documented. There were a total of 87 systems from which 26 depressions and seven named storms evolved. Descriptors: 1. Storms; 2. Tropical cyclones; 3. Hurricanes.

71-04-01-26

Garza, Carlos, Jr. (National Weather Service, Weather Service Office, Port Arthur, Tex.). "A STUDY OF FUNNEL CLOUD OCCURRENCES IN THE BEAUMONT-PORT ARTHUR-ORANGE IN TEXAS". NOAA, National Weather Service, Southern Region, Fort Worth, Tex. NOAA Technical Memorandum NWS SR-52. Jan. 1971. 11 pp. #1 COM-71-00306

Statistical information on funnels aloft in the Beaumont-Port Arthur-Orange, Tex., area was gathered for the 20-year period 1950-69. Most of the funnel cloud activity occurred during the late spring, summer, and early autumn, with the peak in July. Most funnels occurred during the day, and 83 percent never touched ground. Synoptic conditions were examined, and a rough "rule of thumb" stated for funnel cloud study in the Port Arthur area. Descriptors: 1. Atmosphere disturbances; 2. Clouds (meteorology); 3. Texas; 4. Statistical analysis; 5. Synoptic meteorology; 6. Weather forecasting.

71-04-01-27 UDC 551.542.1:551.554:551.465.752(261.26)

Hasse, Lutz. (Department of Oceanography, Oregon State University, Corvallis, Oreg.) and Wagner, Volker. (Meteorologisches Institut der Universität Hamburg, Germany). "ON THE RELATIONSHIP BETWEEN GEOSTROPHIC AND SURFACE WIND AT SEA". Monthly Weather Review, 99(4):255-260, Apr. 1971. #2 $0.65.

The ratio between observed surface and geostrophic wind speed has been investigated from observations at the German Bight, taking geostrophic wind and the air-sea temperature differences as parameters. The ratio decreases with increasing geostrophic wind and increasing stability. While stability is an important parameter for light to moderate winds, variation of the ratio with geostrophic wind speed cannot be neglected, taking the full range of geostrophic wind speeds into consideration. From the Navier-Stokes equations, such a variation is to be expected. For light winds, the (local) surface wind may exceed the (mesoscale) geostrophic wind. Both effects together can be described approximately by a linear relation between the surface wind and geostrophic wind, with a slope of 0.56 and a constant term b 0 varying with stability. The residual error was 2 m/s. Variation with latitude is inferred from the Navier-Stokes equations. Descriptors: 1. Geostrophic wind; 2. Wind (meteorology); 3. Sea breezes; 4. Air water interactions; 5. Sea states; 6. Sea water; 7. Atmospheric physics; 8. Temperature; 9. Navier-Stokes equations.

71-04-01-28

Hooke, William H. (ESSA, Institute for Telecommunication Sciences, Boulder, Colo.). "E-REGION IONOSPHERIC IRREGULARITIES PRODUCED BY INTERNAL ATMOSPHERIC GRAVITY WAVES". Planetary and Space Science, 17(4):749-765, Apr. 1969. #1 COM-71-00211

A linearized perturbation treatment is developed for study of the roles of both photochemical and dynamical effects in the gravity-wave production of E-region ionospheric irregularities. It is found that the two effects may be comparable in magnitude and the small wave-associated vertical motions of the neutral gas may play a significant role in producing ion convergence. Results of numerical calculations are presented to illustrate these statements. Descriptors: 1. Ionosphere; 2. E-region; 3. Gravity waves; 4. Photochemical reaction; 5. Perturbation; 6. Electron temperature; 7. Ion density; 8. Wind shear.

02 Earth Sciences

71-04-02-01

Gossett, F. R. "MANUAL OF GEODETIC TRIANGULATION". Coast and Geodetic Survey, Special Publication No. 247, Revised Edition, 1959. (Reprinted 1971). 363 pp. #2 $3.00.

This manual is a compilation of approved methods for triangulation surveys at the Coast and Geodetic Survey. It furnishes specifications and instructions to personnel engaged in such operations. Descriptors: 1. Triangulation; 2. Geodetic surveys; 3. Land surveys; 4. Civil engineering; 5. Surveying instruments; 6. Theodolites.

71-04-02-02

Hitch, Philip D., and Yellin, Martin J. "ESTABLISHMENT OF THE GRAVITY TEST RANGE, CAPE FLATTERY, WASHINGTON - NORTHERN PORTION". ESSA, Coast and Geodetic Survey, Office of Geodesy and Photogrammetry, Rockville, Md. Operational Data Report C&GS DR-7. Nov. 1969. 19 pp. #1 COM-71-00377.

Presented are data from land and sea stations, equipment and operational descriptions, recommendations for future surveys, and contour maps of the area. Descriptors: 1. Gravimeters; 2. Test ranges; 3. Underwater equipment; 4. Hydrographic surveys; 5. Washington (state); 6. Echo sounding.

71-04-02-03

NOAA, National Ocean Survey, Rockville, Md. "ALEUTIAN SEISMIC PROGRAM SEISMOLOGICAL BULLETIN, APRIL 1970". CGS-746-106. U.S. Atomic Energy Commission, Nevada Operations Office, Contract AT(29-2)-746. Feb. 1971. 51 pp.

This bulletin collects and distributes preliminary data acquired from an aleutian network of seismic stations in order to facilitate current studies of earthquakes in the Aleutian Islands. The Special Projects Party, Las Vegas, Nev., scales the record arrival times and amplitudes. The Seismology Division, Rockville, Md., performs the final reduction and collation of data to event hypocenters and derivation of related parameters. This compilation is preliminary and may be revised later on the basis of current research. Descriptors: 1. Seismology; 2. Seismological stations; 3. Seismic detection; 4. Field data.

71-04-02-04

NOAA, National Ocean Survey, Rockville, Md. "ALEUTIAN SEISMIC PROGRAM SEISMOLOGICAL BULLETIN, MAY 1970". CGS-746-107. U.S. Atomic Energy Commission, Nevada Operations Office. Contract AT(29-2)-746. Feb. 1971. 85 pp. #1

See entry 71-04-02-03.

71-04-02-05

Zetler, Bernard D. (ESSA, Atlantic Oceanographic and Meteorological Laboratories, Miami, Fla.). "INTERNATIONAL SYMPOSIUM ON EARTH TIDES". EOS, Transactions, American Geophysical Union, 51(1):9, Jan. 1970. #1 COM-71-00304.

The Sixth International Symposium on Earth Tides was held at the University of Strasbourg, France, Sept. 15-20, 1969. It was organized by the Permanent Commission on Earth Tides, International Association of Geodesy, IUGG. The highlights of the symposium are given. Descriptors: 1. Tides; 2. Atmospheric tides; 3. Ocean tides; 4. Symposia; 5. Instruments; 5. Measurements.

03 Environmental Systems

71-04-03-01

Booz-Allen Applied Research, Inc., Washington, D.C. "A STATISTICAL DATA PLAN FOR THE BARBADOS OCEANOGRAPHIC METEOROLOGICAL EXPERIMENT (BOMEX)". ESSA Research Laboratories, The Barbados Oceanographic Meteorological Analysis Project (BOMAP), Rockville, Md. ESSA Contract No. 192-69(N), Task 4. Final Report. July 5, 1970. 73 pp.

Reduction of the BOMEX data to a form useful for storage, scientific computation, and interpretation presented many statistical problems. The contract was to provide a methodology for estimating the terms of the budget equations and for assessing the precision of the estimates. The budget equations were equations for the flux of energy from the ocean to the atmosphere into and out of the BOMEX box (an imaginary box about 500 km square and 500 mbs of pressure differential high in an ocean area near Barbados). Descriptors: 1. (BOMEX) Barbados Oceanographic and Meteorological Experiment; 2. (BOMAP) Barbados Oceanographic Meteorological Analysis Project; 3. Oceanographic data; 4. Meteorological data; 5. Data processing; 6. Data storage; 7. Statistical analysis.

71-04-03-02

Grim, Paul J. "A COMPUTER PROGRAM FOR REDUCING MARINE BATHYMETRIC, MAGNETIC, AND GRAVITY DATA". NOAA, Atlantic Oceanographic and Meteorological Laboratories, Miami, Fla.). NOAA Technical Memorandum ERL AOML-11. Jan. 1971. 46 pp. #1 COM-71-00305

The computer program corrects soundings for sound velocity variations (if desired), computes residual magnetic anomalies from magnetic total-intensity values, and reduces marine gravity values to free-air anomalies corrected for Eotvos effect and drift. Each geophysical data point is associated with a date-time group, a geographic position, and an approximate mileage along track. The output is in the form of separate magnetic tapes and listings each for bathymetric, magnetic, and gravity data, in a format suitable for direct input to display or analytical programs. The program is in FORTRAN IV language and was developed on the IBM 360/65 computer at the Computer Center of the University of Miami. It is now being used by the Marine Geology and Geophysics Laboratory (MGGL) of the Atlantic Oceanographic and Meteorological Laboratories. Descriptors: 1. Computer programs; 2. Data reduction; 3. Data smoothing; 4. Reduced gravity; 5. Bathymetry; 6. Magnetic anomaly detection; 7. Geophysical surveys; 8. Oceanographic surveys.

04 Hydrology and Limnology

71-04-04-01

Barnes, James C., Chang, David T., and Willand, James H. "IMPROVED TECHNIQUES FOR MAPPING SEA ICE FROM SATELLITE INFRARED DATA". Allied Research Associates, Inc., Concord, Mass. 8G74-F. NOAA, National Environmental Satellite Service, Washington, D.C. NOAA Contract No. E67-70(N). Nov. 1970. 95 pp. #1 COM-71-00271

High Resolution Infrared Radiometer (HRIR)data from the Nimbus II and III satellites were used. Arctic sea-ice distributions in the autumn of 1969 mapped from Nimbus II HRIR film strips were compared with distribution previously mapped from Nimbus II for the similar period of 1966. Ice was also mapped for 2 winter months, a season for which Arctic HRIR data had not previously been available. To obtain a more objective interpretation of gray-scale variations in the film strips, densitometric measurements were also made. Based on the results of these measurements, experiments were performed to improve the gray-scale contrast within the temperature of interest. Descriptors: 1. Sea ice; 2. Infrared mapping; 3. Arctic regions; 4. Greenland Sea; 5. Baffin Bay; 6. Barents Sea; 7. Densitometers; 8. Optical instruments.

71-04-04-02

Miller, John F., and Frederick, Ralph H. (both, National Weather Service, Office of Hydrology, Silver Spring, Md.). "THE PRECIPITATION REGIME OF LONG ISLAND, NEW YORK". U.S. Geological Survey Professional Papers, 627-A. 1969. 21 pp.

Descriptors: 1. Precipitation (meteorology); 2. New York; 3. Long Island (New York).

05 Marine Biology and Fisheries

71-04-05-01

Anas, Raymond E. (National Marine Fisheries Service, Marine Mammal Biological Laboratory, Seattle, Wash.), and Wilson, Alfred J. Jr. (Department of Interior, Gulf Breeze Laboratory, Gulf Breeze, Fla.). "RESIDUES IN FISHES, WILDLIFE AND ESTUARIES: ORGANOCHLORINE PESTICIDES IN NURSING FUR SEAL PUPS". Pesticides Monitoring Journal, 4(3):114-116, Dec. 1970. #1 COM-71-00297

Samples of muscle, brain, liver, blubber, and ingested milk from five nursing fur seal pups, Callorhinus ursinus, were analyzed for organochlorine pesticides and polychlorinated biphenyl compounds (PCB's). Of 25 samples of tissue and ingested milk, 25 contained DDE; 19, DDD; 22, DDT; and 9 contained dieldrin. All of the samples of ingested milk and tissues, with the exception of brain tissue, contained trace amounts of PCB's. Concentrations of DDE, DDD, and DDT in the liver and brain of 4-month-old nursing pups tended to be higher than those found in 4-month fetuses studied previously. Descriptors: 1. Seals (mammals); 2. Pesticides; 3. Chlorine organic compounds; 4. Wildlife; 5. Fishes; 6. Estuaries.

71-04-05-02

Anderson, William D., Jr. (Associate Professor, Department of Biology, University of Chattanooga, Chattanooga, Tenn.). "REVISION OF THE GENUS

SYMPHYSANODON (PISCES: LUTJANIDAE) WITH DESCRIPTIONS OF FOUR NEW SPECIES". Fishery Bulletin, 68(2):325-346, Feb. 1971. *1

The genus is redescribed; four new species - two from the western Atlantic and two from the Pacific - are described; S. typus, from the Pacific and until recently the only known species of the genus, is redescribed; and a key to the species is provided. Discussions are presented on the systematic position of the genus, the synonymies of species, and the zoogeography and phylogeny of the genus; species are compared; and brief comments are made on distributions. Descriptors: 1. Fishes; 2. Animal husbandry; 3. Taxonomy.

71-04-05-03

Bullis, Harvey R., Jr., and Struhsaker, Paul J. (both, National Marine Fisheries Service Pascagoula Exploratory Fishing and Gear Research Laboratory, Pascagoula, Miss.). "FISH FAUNA OF THE WESTERN CARIBBEAN UPPER SLOPE". Quarterly Journal of the Florida Academy of Sciences, 33(1):43-76, 1970. #1 COM-71-00273

The importance of studies concerning offshore benthic marine habitats and associations of animals is gradually being realized. The concept of the marine environment is changing from one of extensive, homogeneous habitats with vague boundaries and randomly dispersed individuals to one of diverse and well-defined habitats which closely control the composition and distribution of associated faunas. Basic descriptions of these distributions are required as bases for more advanced ecological investigations. Previously a qualitative and quantitative description of the total upper Continental Slope fish fauna in a tropical region has not been available. It is the purpose of this paper to provide such a description for the western Caribbean Sea. Descriptors: 1. Marine fishes; 2. Abundance; 3. Distribution (property); 4. Submarine topographic features; 5. Fishing grounds; 6. Ocean currents; 7. Temperature; 8. Continental Slope; 9. Caribbean Sea.

71-04-05-04

Captiva, Francis J. (Bureau of Commercial Fisheries, Exploratory Fishing and Gear Research Base, Pascagoula, Miss.). "CHANGES IN GULF OF MEXICO SHRIMP TRAWLER DESIGN". Presented at: The Federal-Provincial Atlantic Fisheries Committee. Conference on Canadian Shrimp Fishery, Saint John, N.B., Canada, Oct. 27-29, 1970. 17 pp.) #1 COM-71-00312

Shrinking profits resulting from spiraling production costs and increasing competition for the world shrimp market with foreign competitors has resulted in measurable change in the U.S. shrimp industry's outlook in regard to vessel design and construction. Advances in shrimp trawler design concepts have, over the years, been for the most part confined to an increase in vessel size and numbers--the number of vessels increasing in far greater proportion than in any other segment of the U.S. fishing industry. Acceptance of the idea that the application of space-age technology can result in greater profits through design efficiency and the de-emphasis of the initial cost factor are mainly responsible for the industry's change in outlook. Recent innovations (1970's) that promise greater profits are the introduction of all-aluminum and reinforced fiberglass self-sufficient trawlers capable of fishing anywhere in the world ocean. Descriptors: 1. Shrimps; 2. Ships (fishing vessels); 3. Naval architecture; 4. Fisheries; 5. Fiberglass-reinforced plastics; 6. Aluminum; 7. Production methods; 8. Profits; 9. Gulf of Mexico; 10. Fishing; 11. Fishing grounds; 12. Oceanographic ships.

71-04-05-05

Chenoweth, Stanley B. (Bureau of Commercial Fisheries, Biological Laboratory, West Boothbay Harbor, Maine). "SEASONAL VARIATIONS IN CONDITION OF LARVAL HERRING IN BOOTHBAY AREA OF THE MAINE COAST". Journal of the Fisheries Research Board of Canada, 27(10):1875-1879, Oct. 1970. #1 COM-71-00275

The relative condition values for larval Clupea harengus harengus L. in the Boothbay area of the Maine coast were lowest in winter: in February in 1965, 1966, and 1967 and in January in 1968. Low water temperatures and a scarcity of food are suggested as reasons for the poor condition. Larval condition showed the greatest variation in 1964-65 and in February 1965 reached the lowest point for the 4 years. The evidence suggests that larval mortality was unusually high during that winter. Descriptors: 1. Herrings; 2. Mortality; 3. Starvation; 4. Maine; 5. Seasonal variation; 6. Oceans; 7. Temperature; 8. Boothbay Harbor (Maine); 9. Clupea harengus harengus L.

71-04-05-06

Cohen, Daniel M. (Bureau of Commercial Fisheries, Washington, D.C.). "HOW MANY RECENT FISHES ARE THERE?" Proceedings of the California Academy of Sciences, Fourth Series, 38(17):341-346, Dec. 31, 1970. #1 COM-71-00263

Estimates are given, on the basis of information solicited from specialists, of the number of kinds of Recent fishes. The results are: Agnatha, about 50; Chondrichthyes 515 to 555; Osteichthyes 19,135 to 20,980. 41.2 percent of all fishes are primary fresh water (33.1 percent) or secondary fresh water (8.1 percent). Diadromous fishes are 0.6 percent. Warm water shore and Continental Shelf Fishes are 39.9 percent; cold water shore and shelf 5.6 percent. Continental slope and deep-sea benthic fishes are 6.4 percent; epipelagic 1.3 percent and deep pelagic, 5.0 percent. Descriptors: 1. Fishes; 2. Fresh-water fishes; 3. Marine fishes; 4. Counting.

71-04-05-07

Cook, Harry L., and Lindner, Milton J. (both, Bureau of Commercial Fisheries, Biological Laboratory, Galveston, Tex.). "SYNOPSIS OF BIOLOGICAL DATA ON THE BROWN SHRIMP PENAEUS AZTECUS AZTECUS IVES, 1891". FAO Fisheries Report, 4(57):1471-1497, 1970. #1 COM-71-00364

Topics covered are nomenclature, taxonomy, morphology, distribution, bionomics and life history, population, fishing, protection and management, and pond culture. Descriptors: 1. Shrimps; 2. Taxonomy; 3. Morphology; 4. History; 5. Populations; 6. Fishing; 7. Protection; 8. Management; 9. Aquaculture; 10. Atlantic Ocean.

71-04-05-08

Cooper, Richard A., and Uzmann, Joseph R. (both, Bureau of Commercial Fisheries, Biological Laboratory, West Boothbay Harbor, Maine). "MIGRATIONS AND GROWTH OF DEEP-SEA LOBSTERS, HOMARUS AMERICANUS". Science, 171(3968): 288-290, Jan. 1, 1971. #1 COM-71-00333

In distinct contrast to the restricted movements of coastal stocks of american lobsters, those inhabiting the outer continental shelf undertake extensive seasonal migrations. Of 5710 tagged lobsters released on the outer continental shelf of New England from April 1968 to June 1969, 400 had been recaptured by April 1970. The distribution of the recoveries demonstrated shoalward migration in spring and summer and a return to the edge of the shelf in fall and winter. Deep-sea lobsters have a faster rate of growth than coastal lobsters; growth increments at molting and the frequency of molting are greater. Descriptors: 1. Lobsters; 2. Marketing; 3. Animal migrations; 4. Seasonal variation; 5. Growth; 6. Continental shelves; 7. Atlantic Ocean.

71-04-05-09

Day, Donald S. (NOAA, National Marine Fisheries Service Biological Laboratory, Seattle, Wash.). "MACROZOOPLANKTON AND SMALL NEKTON IN THE COASTAL WATERS OFF VANCOUVER ISLAND (CANADA) AND WASHINGTON, SPRING AND FALL OF 1963". Special Scientific Report--Fisheries No. 619. Jan. 1971. 94 pp. *1 #1 COM-71-00283

Eight species of euphausiids, five species of mysids, and 14 species of fish were identified. Euphausiids composed about 90 percent by number of the organisms caught, and fluctuations in their abundance were concomitant with changes in the biomass of the samples. The bulk of the organisms collected at night were in the upper 30 m. All species were taken by a 0.9-m Isaacs-Kidd midwater trawl. The concentration of organisms was lowest near shore, reached a maximum at or near the outer edge of the continental shelf, and decreased again farther offshore. The concentration of organisms was greater in the southern part of the region than in the northern part. This distribution was apparently related to the general surface circulation. Seasonal fluctuations were indicated by a decrease in biomass from spring to fall. Descriptors: 1. Marine biology; 2. Plankton; 3. Ocean environments; 4. Aquatic animals; 5. Fishing grounds; 6. Fishing; 7. Food supply; 8. Sampling; 9. Collection methods; 10. Seasonal variations.

71-04-05-10

Detwyler, R. (Norwich University, Northfield, Vt.), and Houde, E. D. (Bureau of Commercial Fisheries, Tropical Atlantic Biological Laboratory, Miami, Fla.). "FOOD SELECTION BY LABORATORY-REARED LARVAE OF THE SCALED SARDINE HARENGULA PENSACOLAE (PISCES, CLUPEIDAE) AND THE BAY ANCHOVY ANCHOA MITCHILLI (PISCES ENGRAULIDAE)". Marine Biology, International Journal on Life in Oceans and Coastal Waters, 7(3):214-222, Nov. 1970. #1 COM-71-00367

Natural plankton was fed to the larvae during the 22 days following hatching. Food levels in the rearing tanks were maintained at an average of 1,600 to 1,800 potential food organisms per liter. Larvae of both species selected as food copepod nauplii, copepodites, and copepods; initial feeding was on organisms of 50 to 75 μ body width. Larvae of H. pensacolae averaged 4.2 mm in total length at hatching, and those of A. mitchilli about 2.0 mm. H. pensacolae larvae grew about 1.0 mm per day and A. mitchilli 0.7 mm per day. The mean number of food organisms in each digestive tract was greater in H. pensacolae than in A. mitchilli, and the difference in number increased as the larvae grew. Average size of food organisms eaten increased for both species with growth, because of selection by the larvae; the average size of copepodites and copepods in digestive tracts increased at a faster rate in H. pensacolae than A. mitchilli. A. mitchilli longer than 8 mm did not eat copepod naupli. Descriptors: 1. Marine fishes; 2. Animal behavior; 3. Food consumption; 4. Feeding habits; 5. Selection; 6. Aquaculture; 7. Stomach.

71-04-05-11

Dragovich, Alexander. (Bureau of Commercial Fisheries, Tropical Atlantic Biological Laboratory, Miami, Fla.). "THE FOOD OF BLUEFIN TUNA (THUNNUS THYNNUS) IN THE WESTERN NORTH ATLANTIC OCEAN". Transactions of the American Fisheries Society, 99(4):726-731, Oct. 1970. #1 COM-71-00375.

The stomach contents of 250 bluefin tuna captured from 1965 to 1966 by longline, purse seine, and trolling, were analyzed quantitatively and qualitatively. A large percentage (65 percent) of stomachs were empty. The food of bluefin tuna consisted of 22 taxa of fish, 10 of mollusks, and 8 of crustaceans. Salps were also present. By volume, fishes accounted for 76.9 percent of the stomach contents; mollusks, 18.1 percent; crustaceans, 4.2 percent; and unidentified invertebrates and salps, 0.7 percent. All food organisms were pelagic. The data do not show a clear relation between size of tuna and size of food. Differences were marked between composition of forage found in deep-swimming tunas caught by longline and that in tunas caught at the surface by purse seine or trolling. Descriptors: 1. Tuna; 2. Food consumption; 3. Animal nutrition; 4. Feeding habits; 5. Crustacea; 6. Mollusca; 7. Stomach; 8. Animal behavior.

71-04-05-12

Durkin, Joseph T., Park, Donn L., and Raleigh, Robert F. (all, Fishery Biologists, Bureau of Commercial Fisheries Biological Laboratory, Seattle, Wash.). "DISTRIBUTION AND MOVEMENT OF JUVENILE SALMON IN BROWNLEE RESERVOIR, 1962-65". Fishery Bulletin, 68(2):219-245, Feb. 1971. *1

Juvenile salmon-chinook (Oncorhynchus tshawytscha), coho (O. kisutch), and sockeye and kokanee (O. nerka)-were studied. Their rates and direction of movement, spatial distribution, and successful passage to the outlet varied in relation to surface currents, water temperature, and dissolved oxygen concentrations. Some juvenile salmon stayed in Brownlee Reservoir through the summer, fall, and early winter; the percentage varied between years. The percentages were highest in years with high water level and retarded, disoriented flows during the spring migration. Salmon that held over eventually concentrated in rather restricted areas of the reservoir through the summer and early fall, owing to high epilimnion temperatures and to low concentrations of dissolved oxygen that extended into the epilimnion from the hypolimnion. When the water level was low and reservoir currents were oriented downstream, loss of orientation by juvenile salmon was least and movement through the reservoir was most rapid. These reservoir conditions varied, but salmon populations that migrated early in the year were most likely to encounter them. Descriptors: 1. Fishes; 2. Fishing; 3. Salmon; 4. Sampling; 5. Reservoirs; 6. Hydroelectric power generation; 7. Dams.

71-04-05-13

Ellis, Robert J. (Bureau of Commercial Fisheries, Biological Laboratory, Auke Bay, Alaska). "ALLOPERLA STONEFLY NYMPHS: PREDATORS OR SCAVENGERS ON SALMON EGGS AND ALEVINS?" Transactions of the American Fisheries Society, 99(4):677-683, Oct. 1970. #1 COM-71-00387

Stonefly nymphs have frequently been suspected of being predators or scavengers on salmonid eggs and alevins, and recent studies have particularly emphasized Alloperla nymphs. Live and dead salmon alevins were placed in perforated plastic boxes and buried in spawning riffles of two streams. Most dead alevins disappeared, and more than 50 percent of the live alevins survived.

Nymphs of Alloperla (A. oregonensis and A. borealis) were the most consistently abundant benthic animal in the plastic boxes. Dead eggs and alevins disappeared more rapidly from boxes placed in an area which contained few naturally occurring dead salmon eggs than in areas which contained many. Dead eggs and alevins were eaten, and live eggs and alevins survived when placed in aquaria with Alloperla nymphs. I conclude that the Alloperla nymphs definitely were scavengers and probably not predators on pink salmon eggs and alevins. Descriptors: 1. Salmon; 2. Diptera; 3. Life span; 4. Survival.

71-04-05-14

Fore, Paul Lewis. (NOAA, Estuarine and Menhaden Research Center, Beaufort, N.C.). "RESPONSES OF FRESHWATER FISHES TO ARTIFICIAL LIGHT". Dissertation Abstracts International, 30(10):2, 1970. #1 COM-71-00256

The effects of artificial white light were investigated in lentic habitats of southern Illinois. The source of light was a single bulb (60 - 500 watts) which was usually positioned about 1 m above and perpendicular to the surface of the water. Techniques used to detect the fishes included visual observation, electric shocker, angling, and lift netting. A description of the attraction of fishes to an artificial light included a positive phototaxis, an illumination of preference (maximum, intermediate, or minimum), and the subsequent orientation (obligate school, facultative school, independent, or inconclusive) under the light. Fishes that avoided an area of artificial illumination demonstrated a negative phototaxis. Similar trends in the responses of fishes occurred among species and ontogenetic stages within the same family. It was concluded that the optimum conditions for the attraction of fishes were dependent upon a point source of light above the surface which created an underwater cone of illumination within the surrounding darkness and upon active fishes with light-adapted vision in the vicinity of the illumination. Descriptors: 1.Fishes; 2. Fishing; 3. Fish repellents; 4. Underwater light; 5. White light.

71-04-05-15

Gehringer, Jack W. (Fishery Biologist, Bureau of Commercial Fisheries Biological Laboratory, Brunswick Ga.). "YOUNG OF THE ATLANTIC SAILFISH, ISTIOPHORUS PLATYPTERUS". Fishery Bulletin, 68(2):177-189, Feb. 1971. *1

One hundred fifty-four Atlantic sailfish, 26.1 to 216 mm. in standard length, were dip netted on cruises of the Bureau of Commercial Fisheries charter vessel SILVER BAY off the south Atlantic Coast of the United States in 1960 and 1962. This group of specimens (larger than any previously available collection of sailfish of similar size) was examined to determine changes during development. Thirty-four eastern Atlantic specimens 13.8 to 238 mm. in standard length that were dip netted in 1968 on a cruise of the Bureau's vessel UNDAUNTED in the Gulf of Guinea were compared with the specimens from the western Atlantic. Five western Atlantic specimens are illustrated. Loss of larval characteristics and development of fins and fin rays and pigmentation are discussed. Correlations of numbers of fin rays and statistics describing relationships of measurements of selected body parts for western Atlantic specimens are presented. Principal differences between eastern and western Atlantic specimens are the slightly longer pectoral fin, snout, and head in eastern Atlantic specimens. Descriptors: 1. Fishes; 2. Morphology.

71-04-05-16

Gutherz, Elmer J. (Fishery Biologist). "CHARACTERISTICS OF SOME LARVAL BOTHID FLATFISH, AND DEVELOPMENT AND DISTRIBUTION OF LARVAL SPOTFIN FLOUNDER, CYCLOPSETTA FIMBRIATA (BOTHIDAE)". Fishery Bulletin, 68(2): 261-283, Feb. 1971. *1

Pertinent literature on larval flatfish of the family Bothidae and some of the characters helpful in identifying these larvae are discussed. Helpful characters are of two types; transitory, those which are lost, and permanent, those which are retained. Transitory characters include larvae pigmentation, elongate dorsal and pelvic fin rays, and spination; permanent characters include meristic counts, placement of pelvic fin bases and fin rays, and caudal osteology. Developmental changes in general growth patterns, formation of fins, larval spination, pigmentation, migration of the right eye, and sequence of ossification based on 171 larvae (1.7-14.5 mm/SL) collected off the south Atlantic coast of the United States is presented. Several sizes of larvae showing spination, pigmentation, and elongate fin rays are illustrated, and one illustration shows the degree of ossification. Spawning appears to occur between April and October in waters of about 50 m/ or less. Fertilized eggs have not been seen, but their size at hatching is estimated to be about 1.5 mm. Descriptors: 1. Fishes; 2. Flatfishes; 3. Larvae.

71-04-05-17

Hettler, William F., Jr. (Bureau of Commercial Fisheries, Center for Estuarine and Menhaden Research, Beaufort, N.C.). "EFFECT OF PATERNAL DEATH ON SPERM VIABILITY IN THE ORANGETHROAT DARTER". The Progressive Fish - Culturist, 32(4):209-211, Oct. 1970. #1 COM-71-00295

Spermatozoa collected from freshly killed Etheostoma spectabile were tested for their ability to fertilize eggs of the same species. No fertilization occurred from sperm held longer than 3.5 hours after death of donor. Paternal death reduced the number of viable spermatozoa, but the resulting young appeared normal. Spermatozoa lost their motility after 1.5 hours of retention in dead males but fertilized eggs that produced normal offspring. Males from a stream also populated with greenthroat darter, E. lipidum, had spermatozoa that retained their motility longer than spermatozoa from males from a stream without a sympatric species. Descriptors: 1. Fishes; 2. Viability; 3. Germ cells; 4. Reproduction (biology).

71-04-05-18

Hettler, William F., Jr. (National Marine Fisheries Service, Center for Estuarine and Menhaden Research, Beaufort, N.C.). "REARING LARVAE OF YELLOWFIN MENHADEN, BREVOORTIA SMITHI". Copeia, (4):775-776, Dec. 12, 1970. #1 COM-71-00332

The larvae, 15 mm long, were reared from artificially fertilized eggs in 30 o/oo salinity and 20°C. For the first 2 weeks, larvae were fed blastulae of sea urchins (Arbacia) and the algae, Platymonas; thereafter, brine shrimp (Artemia) nauplii were added to the diet. From about 2,000 eggs 100 larvae survived through the fourth day; the last larva died 32 days after hatching. Two larvae are illustrated. Descriptors: 1. Larvae; 2. Aquaculture; 3. Marine fishes; 4. Diets.

71-04-05-19

Hettler, William F., Jr., Lichtenheld, Richard W., and Gordy, Herbert R. (all, Bureau of Commercial Fisheries, Center for Estuarine and Menhaden Research, Beaufort, N.C.). "OPEN SEAWATER SYSTEM WITH CONTROLLED TEMPERATURE AND SALINITY". The Progressive Fish - Culturist, 33(1):3-11, Jan. 1971. #1 COM-71-00286

Description and diagrams of a continuous flow sea-water system that supplies filtered water with controlled temperatures at ambient or warmer and with controlled salinities at ambient or lesser. Descriptors: 1. Controlled atmospheres; 2. Salinity; 3. Sea water; 4. Marine fishes; 5. Aquaculture; 6. Filtration; 7. Water storage; 8. Continuous flow sea-water system; 9. Aquariums.

71-04-05-20

Hida, Thomas S. (National Marine Fisheries Service, Hawaii Area Fishery Research Center, Honolulu, Hawaii). "SURFACE TUNA-SCHOOL FISHING AND BAITING AROUND SAMOA ISLANDS". Commercial Fisheries Review, 32(12):37-41, Dec. 1970. #1 COM-71-00293

A series of offshore and inshore surveys were made by the NMFS research vessel CHARLES H. GILBERT. The primary mission was to survey the distribution and abundance of surface tuna schools through visual observations, trolling, and live-bait pole-and-line fishing. The cruise findings regarding these operations are presented in detail. Descriptors: 1. Tunas; 2. Fishing grounds; 3. Samoa Islands; 4. Abundance; 5. CHARLES H. GILBERT vessel.

71-04-05-21

Houde, Edward D. (Bureau of Commercial Fisheries, Tropical Atlantic Biological Laboratory, Miami, Fla.), Futch, Charles R. (Florida Department of Natural Resources Marine Research Laboratory, St. Petersburg, Fla.); and Detwyler, Robert (Norwich University, Northfield, Vt.). "DEVELOPMENT OF THE LINED SOLE, ACHIRUS LINEATUS, DESCRIBED FROM LABORATORY-REARED AND TAMPA BAY SPECIMEN". Florida Department of Natural Resources Technical Series, No. 62, 1970. 43 pp. #1 COM-71-00386

Morphological development is described from specimens reared in the laboratory at Miami, Fla., and from plankton collected at Tampa Bay. The pelagic eggs were spherical, averaged 0.74 mm diameter, and had multiple oil globules. The presence of a foramen and dorsal tentacle serves to separate A. lineatus larvae from the otherwise similar Trinectes maculatus. Larvae of A. lineatus from Tampa Bay usually were more developed at a given length than were laboratory-reared larvae of the same length, and body proportions differed significantly between the two groups. Juveniles from Tampa Bay, Biscayne Bay, and the rearing experiment also differed with respect to certain meristic and morphometric comparisons. Probable reasons for the differences are discussed. Descriptors: 1. Flatfishes; 2. Morphology; 3. Larvae; 4. Florida.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1971 431-998/305

Obtaining Copies of Publications

Following each abstract number are codes which indicate where copies may be obtained. **Official copies** of serial publications may be obtained by NOAA and other government offices from the sources indicated by asterisk-and-number codes, while **sales copies** may be obtained from sources indicated by #-and-number codes.

Code	Source
*1	Publications Section, AD165 National Oceanic and Atmospheric Administration U.S. Department of Commerce Rockville, Maryland 20852
*2	Publications Services Division, R57 Environmental Research Laboratories National Oceanic and Atmospheric Administration U.S. Department of Commerce Boulder, Colorado 80302
*3	National Weather Service Regional Office indicated
*4	Technical Publications Office Lake Survey Center, National Ocean Survey National Oceanic and Atmospheric Administration U.S. Department of Commerce Room 630, Federal Building and U.S. Courthouse Detroit, Michigan 48226
#1	National Technical Information Service U.S. Department of Commerce Sills Building Springfield, Virginia 22151
#2	Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402

Reprints of Monthly Weather Review articles should be requested from the Scientific Information and Documentation Division at the address below. Reprints of other Journal articles should be requested from the author.

Reference questions, where the identification of the desired documents is not known, may be directed to:

Scientific Information and Documentation Division
National Oceanic and Atmospheric Administration
Rockville, Maryland 20852

Reporting Publication

In order to make future announcements as nearly complete as possible, NOAA authors and contract monitors are requested to report publications on Form 25-13 (with five reprints if published in outside media) to the Scientific Information and Documentation Division, AD7, National Oceanic and Atmospheric Administration, Rockville, Maryland 20852 (See NOAA Management Order 12, "NOAA Publications: Reporting Publication Actions.")

PENN STATE UNIVERSITY LIBRARIES
A000072041734